

# ENERGY NEWS

A quarterly publication of the Energy and Utilities Department



## NAVFAC Energy Criteria Team

*In the Business of Promoting the Reduction of Energy  
Consumption and Life Cycle Costs*

### Team Designation

The Energy Policy Act and Executive Order 12902 require the Navy to design and construct energy efficient facilities that (1) reduce energy consumption while significantly increasing the use of renewable energy sources and (2) minimize life cycle costs. Attaining these goals depends to a great extent on use of new and improved energy efficient technologies. While criteria itself does not directly reduce energy consumption, it is the vehicle for putting these technologies to work for the Department of the Navy.

Criteria is used to define facility requirements that meet customers' needs and help the Navy progress toward energy efficiency and cost minimization goals. NAVFAC's **Energy Criteria Team** is highly adept at promoting achievement of these goals. The team, made up of members from a cross-section of organizations, initiates and manages criteria efforts that produce energy and cost savings. They identify new criteria or changes that will provide the best energy saving returns.

The team, established in 1995, includes representatives from the NAVFAC Criteria Office and Guide Specifications Division,

Engineering Field Divisions (EFD), Engineering Field Activities (EFA), Public Works Centers (PWC), and the Naval Facilities Engineering Service Center (NFESC). Their focus is to help reduce initial and life cycle costs associated with renovations or retrofit of existing facilities as well as new construction. The team's review of existing criteria ensures that the engineering design and construction reflect state-of-the-art energy products and technologies.

### Frequently Asked Questions

**What is CRITERIA?** Criteria is an organized body of "corporate knowledge" that defines the desired capability and quality of Navy facilities, related systems, and equipment, such as HVAC and lighting. Criteria is developed by systematically collecting and organizing lessons learned from experience with design, construction, operation, and maintenance of federal facilities and from investigation of new technologies from the private sector. Some recent examples:

The team has revised the Facility Planning & Design Guide, MIL-HDBK-1190. Obsolete targets are replaced with new Design Energy Targets,

(Continued on page 4)



## ESPC Update



There's been a lot of activity in the world of ESPC since our first column; let's try to get up-to-date.

✱ First, a decision has been made by the Navy Shore Energy Council to dedicate a large portion of Navy's future energy funds (usually allocated to funding individual projects) to "buying down" ESPC and DSM projects initiated during FY98 and FY99. Implementation details are being worked out by the Energy Project Development and Execution Team, but it is basically a cash distribution equal to around 10% of the capital investment for each energy project initiated under an ESPC or DSM agreement. The funds must be applied to reduction of contractor payments or payment schedules. It is anticipated that this will be a continuing policy.

✱ The Navy ESPC Team has reached an agreement with the Army Corps of Engineers on terms for use of their regional ESPC contracts, and will have executed an MOA with the Army by the time you read this. The Army's contracts provide an accelerated method of contractor selection and require less effort in setting up initial tasking than other contracting methods. Adding the Army's contracts to the DOE Super ESPC contracts and independent contracting approaches gives the Navy ESPC Team a full tool kit for making ESPC go to work for you.

✱ On 8 June 1998, the Navy's second ESPC contract was awarded at a signing ceremony at the Pentagon. The contract is to be a regional award,

(Continued on page 6)

# Naval Activity Energy Consumption for Jan 97 - Dec 97 (1st Qtr FY98)\*

Includes Housing and Shore for Navy and Marine Corps Activities; excludes Government Owned/Contractor Operated (GOCO), Cold Iron, Transmitter, Simulator and Miscellaneous Support

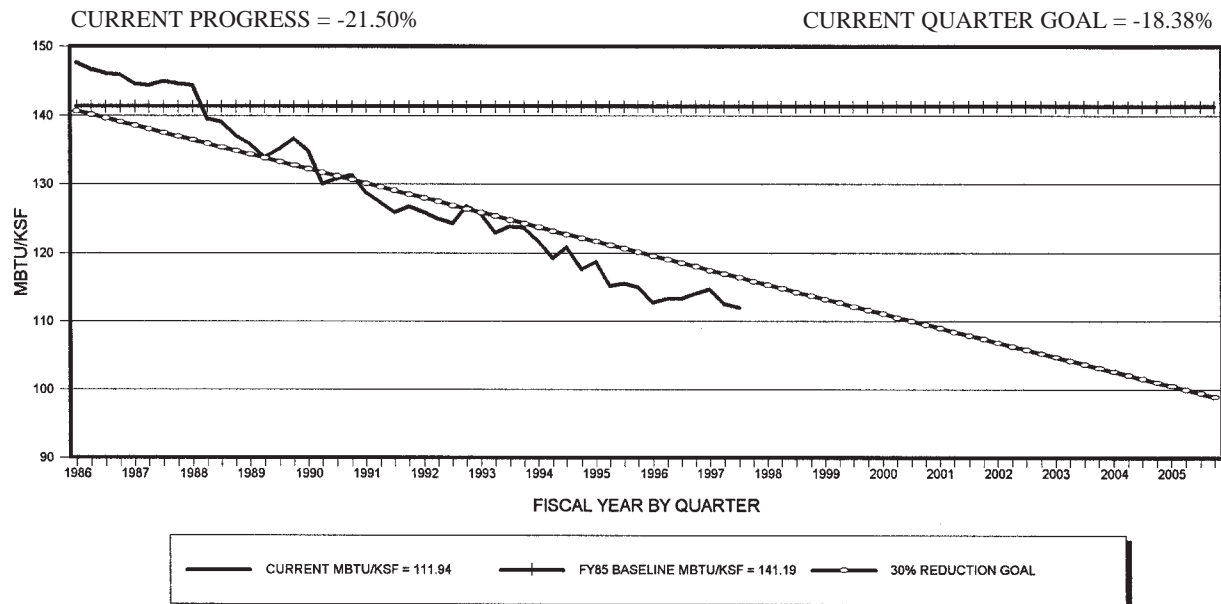
Energy Type	MBtu Consumed		Change From FY85 (%)	By Energy Type (%)
	Jan 97 - Dec 97	FY85**		
Electricity	30,283,582	29,076,897	4.15	43.42
Fuel Oils	12,364,255	26,993,823	-54.20	17.73
Natural Gas	22,795,322	25,531,380	-10.72	32.68
Propane Gas	254,207	314,986	-19.30	0.36
Coal	1,974,740	4,106,710	-51.91	2.83
Steam & Hot Water	982,089	1,288,378	-23.77	1.41
Residual	902,150	1,240,804	-27.29	1.29
Distillate	142,251	63,408	124.34	0.20
Reclaimed Oil	54,187	244,430	-77.83	0.08
Total (12 Months)	69,752,783	88,860,816	-21.50%	100.00%
Navy and Marine Corps (ksf)	629,381	629,396	-0.00%	
Navy and Marine Corps (MBtu/ksf)	110.83	141.18	-21.50%	
Navy Shore and Housing (MBtu/ksf)	116.20	149.71	-22.38%	

\* The interim energy reduction goal for the end of December 97 is -18.38% below FY85 consumption. The percentage is derived by straight line interpolation of the 30% decrease per gross square foot from FY85 to FY2005.

\*\* These FY85 figures incorporate all corrections approved to date.

## 2005 GOAL=30% REDUCTION

1ST QUARTER FY 97 (DEC 97 - DEC 97)





## Will Your Utility Billing System Crash in FY2000?

**FY2000 compliant.** CUBIC calculates utility bills from metered data and energy surveys rather than fixed percentages of the total bill. CUBIC has meter reader interfaces for automated upload of metered data and an Autocad interface for diagramming the meter-to-building relationships. The software can even provide distinct bills to two tenants sharing one building.

Ellie Sexton and Stephen Cannon of the Energy Program Management Branch, ESC221, are available to answer your questions regarding installation and support of CUBIC. Installation should be ordered by 10 January 1999 in order to be operational by FY2000. See the time table of events for further information. To schedule CUBIC installation at your activity, contact:

**Ellie Sexton**

(805) 982-3908 or DSN 551-3908

Internet: esexton@nfesc.navy.mil

- or -

**Stephen Cannon**

(805) 982-1453 or DSN 551-1453

Internet: scannon@nfesc.navy.mil

### CUBIC Installation Time Table of Events

Date	Event
10 Jan 99	CUBIC installation requested; prepare funding document (DD Form 2275) for ESC
15 Jan 99	Send funding, plans, diagrams, and program files to ESC
01 Feb 99	ESC receives funding and plans
05 Feb 99	ESC orders hardware, software, and equipment
06 Feb 99	Meter-To-Meter and Facility-To-Meter drawings begin
15 Feb 99	ESC contracts vendor for data conversion
20 Feb 99	Server database is setup
01 Mar 99	Vendor starts building a data conversion engine
15 Mar 99	Data conversion engine completed; data conversion begins
01 Apr 99	Routes and meter information faxed to ESC
05 Apr 99	ESC enters meter reading routes
05 May 99	All equipment, hardware, and software received
06 May 99	Client system build commences
07 May 99	Client/Server system test begins
07 Jun 99	Mail out equipment and documentation
10 Jun 99	New system setup and installed at activity
14 Jun 99	Personnel training begins (a two-week training session)
01 Jul 99	New system operational for testing prior to 1 Oct 1999! ⚡



## Energy Projects Update

The Energy Projects Development and Execution Team met at ESC in April 1998 to select energy projects for FY99 central funding and to nominate ECIP projects for FY00 funding. Ground rules for allocation of future year program funds were also set.

Attendees came from NAVFAC's Atlantic, Pacific, Southern, and Southwest Engineering Field Divisions (EFDs), most of the Public Works Centers (Guam, Jacksonville, Norfolk, Pensacola, San Diego, and Washington, DC) and the NAVSEASCOM audit team from NAVSHIPYARD Puget Sound.

Issues addressed included execution of energy projects, progress on privatization, Demand Side Management (DSM), and Energy Savings Performance Contracting (ESPC). The EFDs reported substantial activity and success in developing projects for DSM and in executing BOAs with several utility companies. For the latest on ESPC, see page 1 and **ESPC FAQs** on page 7, or call Don Yokum, ESC222, (805) 982-3560.

Beginning with several FY98 projects and continuing into FY99, at least \$7 million will be set aside for DSM and ESPC.



With both DSM and ESPC, an alternative financier (such as the local utility company or a private contractor) pays for improvements that result in energy savings. Total project cost is thus financed and payments are made from the savings realized. In this manner, installations can obtain infrastructure improvements today and pay for them out of future energy savings.

In order to encourage these initiatives, the team will award incentives to bases that enter into DSM and ESPC agreements. The \$7 million will be placed into a pool for DSM and ESPC projects and divided proportionally amongst the projects submitted, based upon total savings to the Navy.

The funds will be used to help buydown the contracts.

The ultimate goals are to fully leverage Navy's resources, gain utility infrastructure improvements, and save energy. If you have ideas for energy improvements on your base and are interested in these incentive funds, contact your local EFD or PWC Energy Office. ⚡

(NAVFAC Energy Criteria Team - Continued from page 1)

reflecting current state-of-the-art energy efficient design and construction.

Navy guide specifications are being improved by incorporating information from DOE's Product Energy-Efficient Recommendation (PEER) Sheets.

These efforts have resulted in a renewed emphasis on meeting mission requirements while minimizing energy consumption and reducing facility life cycle costs.

*Who uses criteria?* Contracting officers, procurement officials, public works personnel, designers, specification writers, constructors, quality control personnel, inspectors, manufacturers, and suppliers in both the public and private sectors.

*Why is it so important?* Criteria plays an important role in the contracting process for the design, construction, and modernization of Navy facilities. High quality, energy efficient, low life cycle cost facilities can only be achieved if our requirements are clearly specified in contracts. *If not spelled out in the contract, the contractor does not have to provide it.*

*How do I access the latest criteria?* The National Institute of Building Sciences (NIBS) distributes the Construction Criteria Base (CCB) on a CD-ROM which contains Navy criteria as well as criteria adopted by other government agencies. It is distributed quarterly and can also be accessed from the Internet:

**[www.nibs.org/ccb](http://www.nibs.org/ccb)**

Criteria information is available from the following websites:

**NAVFAC Criteria Office**

[www.efdlant.navfac.navy.mil/Lantops\\_15/home.html](http://www.efdlant.navfac.navy.mil/Lantops_15/home.html)

**NAVFAC Guide Specifications Division**

[www.nfsgs.navy.mil](http://www.nfsgs.navy.mil)

**DON Energy Website Criteria Page**

(under Program Management)

[www.nfesc.navy.mil/navyenergy/index.html](http://www.nfesc.navy.mil/navyenergy/index.html)

**Work in Progress**

There is a trend in DoD to transition from military to Commercial-Industrial-Institutional (CII) specifications and standards. Facilities with unique military missions, such as magazines and other arms, ammunition, explosives (AAE) facilities, must be designed and constructed to military specifications and standards. Facilities with private sector counterparts, however, should be designed and constructed to CII criteria. Although we are urged to use CII criteria wherever possible, the extent to which it is practical to "commercialize" military criteria or replace it with CII is an issue still being debated.

Meanwhile, the team is busy adapting the **Whole Building Design Process** to military facilities projects. In this synergistic process, stakeholders and participants meet before the start of the design phase to confer, agree upon, and define facility requirements. In Navy work, this usually involves major claimants, EFD planners and design managers, ROICC personnel, facility managers, A-E planners and designers, construction contractors, and contracting personnel. Ideally, they meet to review prelimi-

nary project plans and specifications to ensure that the latest mission needs are fulfilled. The process can be used for both major renovations and new construction

and is expected to minimize change orders and contract modifications, save energy, and reduce costs.

The following guides are under development:

- **Whole Building Design Guide.** Provides detailed guidance on how to apply the **Whole Building Design Process** to military projects.
- **Building Commissioning Guide.** Guidance for design, installation, testing, adjusting, and balancing buildings, and operation and maintenance of HVAC systems.

These guides should be available in the CCB and on the various NAVFAC criteria websites in early 1999. The team recommends that future expansion of the guides should include other building systems.

The **NAVFAC Energy Criteria Team** continues to look for new opportunities to reduce facilities' energy consumption and life cycle costs. For further information, contact team leader, Allen Miller, or any of the team members.



**NAVFAC Energy Criteria Team**

**Allen Miller**

NFESC, ESC212

(805) 982-1343 or Internet: [amiller@nfesc.navy.mil](mailto:amiller@nfesc.navy.mil)

**Richard Paradis**

NAVFAC Criteria Office

(757) 322-4447

**Hal Okholm**

NAVFAC Guide Specifications Division

(805) 982-6087

**Jim Torma**

LANTDIV

(757) 322-4674

**Herb Sakai**

PACDIV

(808) 474-5366

**Dave Astle**

SOUTH DIV

(803) 820-7454

**Pravin Patel**

PWC Great Lakes

(847) 688-4766, extension 316

**Victor Anderson**

NFESC, ESC222

(805) 982-1359





## Equipment Feedback Provides Useful Information

Digital controls are very effective at turning pumps, fans, lights, and plant equipment, or "loads" on and off. Most loads start and stop with magnetic starters. A digital output on a digital controller closes a switch, completing a starting circuit to the magnetic starter, which then closes and completes the operating or "line" voltage to the load. You can schedule equipment to run based on time, temperature, or some combination of events.

How do you know if your remote equipment is really operating correctly? *A feedback signal is the answer.* Feedback falls into two general categories - digital and analog.

### Digital Feedback

Digital feedback is on or off, yes or no. A common application is an auxiliary open contact on the magnetic starter wired to a digital input on the controller. The switch closes when the magnetic starter engages.

Controller software compares the digital output to the digital input. If the output is on, and your input or feedback is off, the load is probably not running. In the reverse case, if the output is off and the feedback is on, the controller may have been bypassed.

A current-operated switch mounted on the line voltage is preferable to an auxiliary switch. The current switch is a better indication of actual load conditions. Many switches have dials or jumpers to set the switch closure to a specific amperage.

Figure 1 illustrates a typical current-operated switch application.

### Analog Feedback

Analog feedback provides more information than digital feedback. Rather than receiving an on/off signal, the input is scaled to a linear signal and read by the controller. The controller can send this signal to a remote computer and show it on a

system graphic. Instantaneous current draw, vibration, and operating temperature are examples of analog feedback.

When the controller measures actual load current, it can calculate and log power used. In addition, comparing feedback to normal values will alert operators to problems. For example, by setting high and low limit alarms on a supply air fan, broken fan belts (low limit) or frozen bearings (high limit) can be detected quickly and easily.

Equipment vibration levels and operating temperature are also useful feedback. Recently, operators at a Pearl Harbor fresh water pumping station noticed a 170°F pump bearing temperature on the remote display. Since normal temperature is around 125°F, the pump was shut down and investigated. A bad cooling water valve was found and replaced, preventing serious damage to the pump.

We can help with all types of monitoring and control applications. Contact one of the following experts from the HVAC and Controls Branch:

**Bruce Caldwell**

Controls Engineer

ESC211

(805) 982-3520 or DSN: 551-3520

Internet: bcaldwe@nfesc.navy.mil

**Glen Sittel**

Branch Head

ESC211

(805) 982-3533 or DSN: 551-3533

Internet: gsittel@nfesc.navy.mil

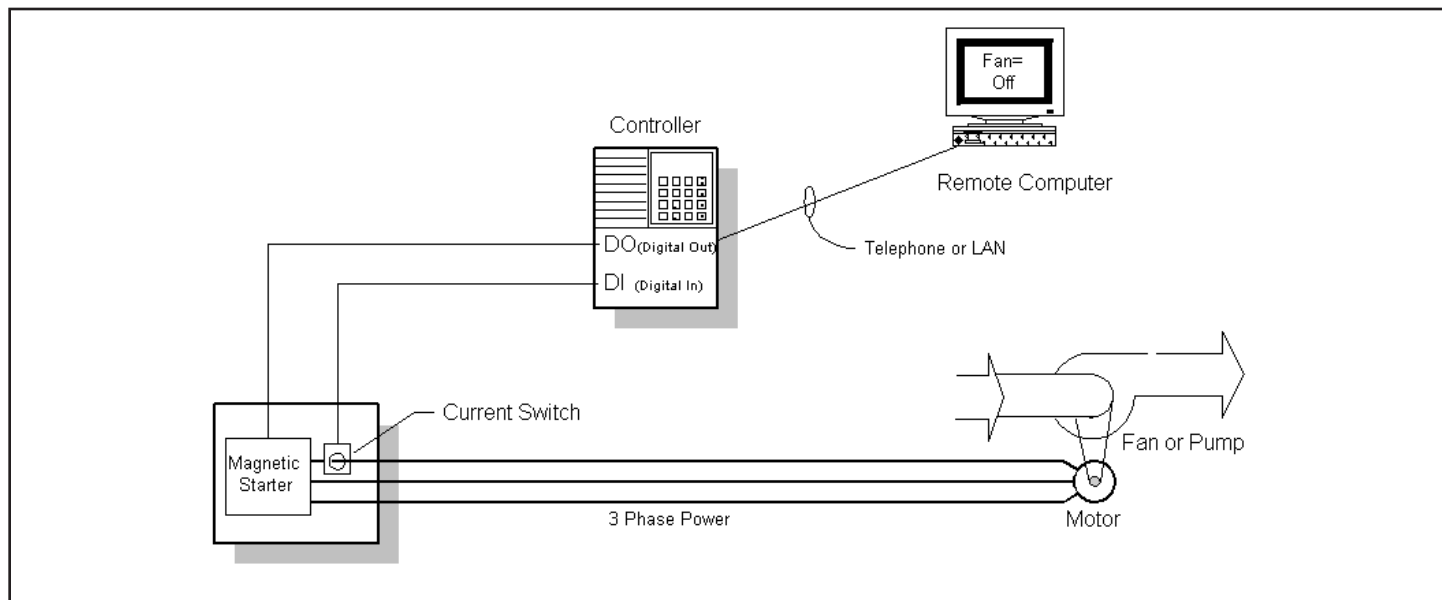
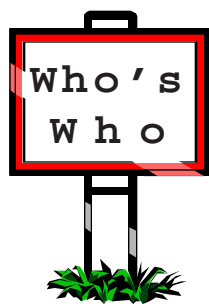


Figure 1. Current-operated switch monitoring motor status. (Courtesy of the Neilsen-Kuljian Company, Mountain View, CA)



## Meet Don Yokum

### Navy ESPC Team Leader

Don Yokum's work habitat at the ESC is lined with contracts – contracts for equipment procurement and modernization, contracts for engineering services, contracts for energy savings projects, and so on. As leader of Navy's Energy Savings Performance Contracting (ESPC) Team, Don is at the forefront of a global effort to market and implement ESPC in the Department of the Navy. He and his team spend a week or more every month introducing ESPC and the risks and benefits to managers and decision-makers at Navy and Marine Corps facilities worldwide.

The team's big push right now is the selection of an Energy Services Contractor to perform energy conservation projects at U.S. Government facilities throughout Japan. Recently, the team awarded a regional ESPC contract for Navy facilities in the Caribbean in addition to the award of a local ESPC contract at the Naval Surface Warfare Center, Crane, Indiana. They are also working with the Army Corps of Engineers and DOE to award energy conservation projects through their contract vehicles.

Don is a native Californian and is a Registered P.E. here. A former merchant marine seafarer, Don graduated from the California Maritime Academy with a Bachelor of Science in Marine Engineering. After a few years at sea, he returned to school at San Francisco State University to

complete undergraduate requirements in physics. His desire to continue his association with ships and the sea eventually led him into employment with naval architecture and marine engineering firms, where he spent a few decades designing ships for the Navy and commercial operators. Early in his career, he involved himself in the marketing and contracting aspects of the business and became increasingly involved with supervision of contracting activities.

After about 30 years of working for the Navy as a contractor, Don finally jumped the fence and went direct. Initially with NSWC, Port Hueneme, in the Underway Replenishment Department, a year later Don joined the Naval Energy and Environmental Support Activity (NEESA), working on power plant equipment contracts and special energy projects until NEESA

merged into ESC. He became associated with Navy's ESPC Program in 1996 and was designated Team Leader early in 1997.

Don spends much of his free time keeping up with maintenance and repairs on the home he built in Ventura, California, but prefers gardening or travelling to fun places with his wife, Geri.

Give Don a call at (805) 982-3560 or DSN 551-3560, or send him an E-mail. He would be happy to hear from you and would love to arrange an ESPC briefing for you and your Commanding Officer. ⚡



(ESPC Update - Continued from page 1)

covering NAS Key West, Florida and NAVSTA Roosevelt Roads, Puerto Rico, with NAVSTA Guantanamo Bay, Cuba as an option. Concurrent initial delivery orders for work totaling \$3,000,000.00 in capital investment were awarded to the selected ESCO, ERI Services, Inc.

✱ Proposals were received from ESCOs interested in the Japan ESPC, that will be available to all U.S. Government agencies in Japan. Proposals to perform a detailed energy survey on the sample task that incorporates energy conservation measures at Fleet Activities, Yokosuka, will be evaluated. A September 1998 contract award date is anticipated.

✱ The Navy ESPC Team participated in presentations at the four Navy and Marine Corps facilities designated as demonstration sites for initial participation of the Defense Energy Support Center (DESC) in ESPC development.

DESC has chosen the Army Corps of Engineers contracts as their contract vehicles, and the Navy ESPC Team will assist the individual facilities in contractor selection and proposal evaluations.

✱ The DOE Western Region Super ESPC contract continues to generate interest among Navy activities in the area and MOAs for implementation of delivery orders have been executed by four facilities so far. A Marine Corps facility in the Southeastern Region has also executed a MOA for Super ESPC use. Sample task technical data packages for all of these facilities are being prepared by the Navy ESPC Team.

✱ A new feature, a compilation of frequently asked questions (FAQS), has been added to our ESPC column. These questions have been derived from presentations at Navy and Marine Corps facilities and through discussions with facility

Energy Managers.

Our goal is to address and resolve any questions or uncertainties you may have about this method of energy conservation contracting. In this issue, see page 7 for **ESPC FAQS** and send your questions to:

**Don Yokum**

(805) 982-3560 or DSN 551-3560

Internet: dyokum@nfesc.navy.mil

- or -

**Dave Schuelke**

(805) 982-3501 or DSN 551-3501

Internet: dschuel@nfesc.navy.mil.

**FAX:**

(805) 982-5388 or DSN: 551-5388



**Let them hear from you!** ⚡

# ESPC FAQs



***What happens if the contractor does a poor job on the first project? Am I stuck with them?***

No way! All ESPC contracts with Navy facilities are structured to guarantee the contractor only the sample task or its equivalent as the minimum level of work under the contract. If, for any reason, you are dissatisfied with your ESCO's performance, contact the Navy ESPC Team; we'll help you get your contractor on track or find another.



***What kind of ESPC Contract Administration training is available?***

Training opportunities are many and varied. Here are a few we recommend:

- DOE Super ESPC Regional Contracts workshops. Presented by DOE personnel in geographical contract regions at no charge to federal agencies.
- ESPC Contracting and Measurement & Verification (M&V) of ESPC Contracts. Presented by the Association of Energy Engineers (AEE) and available at reduced costs to government employees.
- ESPC modules included in the Energy Contracting Course presented by the Navy Civil Engineer Corps Officer School (CECOS). Available in Port Hueneme and field locations several times a year.



***Are any special qualifications necessary to administer an ESPC contract?***

A Contracting Officer's Representative (COR) for contract administration purposes must be assigned by each facility that implements an ESPC. Successful completion and award of a COR certificate from a recognized COR Training Course is required.



***Suppose that after completion of an energy conservation project, the actual savings, as measured by the annual audit, increase substantially over the contractor's guaranteed savings. How much of the increased savings can the ESCO claim?***

**Zero percent.** Under ESPC contracts, the contractor's payments are based only on the installation costs, their O & M costs, and the margins (overhead, profit, interest, etc.) applied to these costs. The delivery order specifies these figures and the contractor's payment schedule. Payments change only under the following conditions:

- Contractor does not meet minimum savings guarantees, in which case the payments are reduced by the percentage amount of the savings shortfall.
- Baseline energy usage adjustment, resulting from a change of use in the facility, which substantially affects energy usage, may result in increased term of payment schedule with reduced annual payments.
- Cash buydown of Delivery Order, which may be used to reduce payments, term, or both.



***How long will it take to get an ESPC implemented at my facility?***

If an independent or regional contract with one or more associated facilities is used, allow 11 to 12 months after execution of your MOA. If you work through your DOE Super ESPC contract, estimate 6 months after MOA completion. An ESCO can be selected within 2 to 3 months after MOA execution, but Task Order initiation may add 4 to 6 months using the Army Corps of Engineers contracts. The Navy ESPC Team will assist you in the most appropriate approach for you. ⚡



**\$ \$ \$**

You may not be using them, but your TVs, VCRs, answering machines, cordless phones, and portable tools that require direct current (DC) electricity are drawing energy even when the power is off.

If all Americans switched to TVs with low standby power loss, they would save more than half a billion dollars in electric bills each year.

**\$ \$ \$**

**ENERGY NEWS**

Published By  
**NFESC**



An unofficial publication of the Energy and Utilities Department

**Commanding Officer:**  
CAPT Donald G. Morris  
CEC, USN

**Energy and Utilities  
Department Head:**  
Richard Messock

**Article Coordinator:**  
Catherine LaLonde  
ESC20, (805) 982-1465  
DSN: 551-1465  
FAX: (805) 982-5388

The views and opinions expressed in this publication are not necessarily those of the United States Navy.



Check us out on  
the Worldwide Web:

URL <http://www.nfesc.navy.mil>  
or

URL <http://energy.navy.mil>

*For Technical Assistance,  
call:*

**1 - 888 - 4 THE ESC  
(1-888-484-3372)**

## ***Inside ...***

- ***NAVFAC Energy Criteria Team***
- ***ESPC Update***
- ***Naval Activity Energy Consumption***
- ***Will Your Utility Billing System Crash In FY2000?***
- ***Energy Project Update***
- ***Equipment Feedback Provides Useful Information***
- ***Who's Who - Meet Don Yokum***
- ***ESPC FAQs***

## **ADDRESS CORRECTION**

Has your address changed? Please fill out the information below  
and fax this page to (805) 982-5388.

Name \_\_\_\_\_

Title \_\_\_\_\_

Organization \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_ Zip \_\_\_\_\_

E-mail \_\_\_\_\_

COMMANDING OFFICER  
NFESC  
1100 23RD AVENUE  
PORT HUENEME CA 93043-4370

OFFICIAL BUSINESS

***ENERGY NEWS***

